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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/575,910	05/23/2000	Gregory P. Kochanski	Kochanski 52-16	2477

22186 7590 08/26/2004

MENDELSON AND ASSOCIATES PC  
1515 MARKET STREET  
SUITE 715  
PHILADELPHIA, PA 19102

EXAMINER
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GRIER, LAURA A

ART UNIT	PAPER NUMBER
2644	8

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/575,910

**Applicant(s)**

KOCHANSKI ET AL.

**Examiner**

Laura A Grier

**Art Unit**

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28, 30-31, 33-34, 37, 39-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-28, 30, 31, 33 and 34, 37, 39-42 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 18-20, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 4-8, 10-17 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

1. The indicated allowability of claim 3 is withdrawn in view of the newly discovered reference(s) to Elko et al. Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 9, 18-20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Elko et al., U. S. Patent. No. 4802227.

Regarding claim 1 and 22, Elko et al (herein, Elko) discloses a noise reduction processing arrangement for microphone arrays. Elko's disclosure comprises a plurality of microphones (101) coupled to a plurality of transversal filters (107), which reads on filtering; and a summing device (120), which reads on a combining the processed audio signals, therein as claimed – col. 4, lines 18-49, and figure 1.

Regarding claim 2, Elko discloses everything claimed as applied above (see claim 1). Elko discloses delay means (105/103) and weighting means (140) - (col. 4, lines 24-27, and 33-36), which reads on delaying and scaling the audio signal from each microphone.

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Regarding claim 9, Elko discloses everything claimed as applied above (see claim 1). Elko discloses the gain of the transversal filters being modulated by the weighting signals (col. 4, lines 33-36, col. 5, lines 19-25), which indicates the filtering being dynamically adjusted, therein.

Regarding claim 18, Elko discloses everything claimed as applied above (see claim 1). Elko disclose the processing of the values of the of the microphones being processed independently as evident of each microphone signal being processed with individual weight signals, filters, etc. (figure 1 and 2).

Regarding claims 19-20, Elko discloses everything claimed as applied above (see claim 1). Elko disclose the processing of the in the time-domain, which constitutes as processing based upon over a period of time, and indicates temporal filtering of the values of the audio signal – col. 2, lines 58-68 and col. 3, lines 1-13, col. 5, lines 37-48.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Elko.

Elko discloses everything claimed as applied above (see claim 1). Even though, Elko discloses an inverse filter, Elko fails to specifically disclose digital filter, therein as claimed. The examiner takes official notice, that a digital filter was well known in the

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art. With the use of a digital filter, such as FIR for corresponding the inverse transfer function of microphone input being a commonly used technique in the art, it would have been obvious to one of the ordinary skill at the time of the invention to implement an digital filter for the purpose of the characteristics of an inverse transfer function to realized by a digital filter so the appropriate coefficients are generated by the filter for ensuring the desired optimal performance of the beamforming process.

6. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over Narendra.

Regarding claim 23, Narendra discloses a compact deployable acoustic sensor.

Narendra's disclosure comprises filtering (54) microphones (16-17), and combining the audio signals via a computing means using covariance matrix to process the signals in a nonlinear manner, and the performing nonlinear estimation processing, therein, as claimed (col. 1, lines 58-68 - col. 2, lines 1-5, and 62-68, col. 5, lines 55-62, col. 7, lines 64- col. 8, lines 1- 54 and figure 3-5). However, Narendra fails to specifically disclose a digital filter, therein as claimed. The examiner takes official notice, that a digital filter was well known in the art.

With the use of a digital filter, such as FIR for corresponding the inverse transfer function of microphone input being a commonly used technique in the art, it would have been obvious to one of the ordinary skill at the time of the invention to implement an digital filter for the purpose of the characteristics of an inverse transfer function to realized by a digital filter so the appropriate coefficients are generated by the filter for ensuring the desired optimal performance of the beamforming process.

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***Allowable Subject Matter***

7. Claims 4-8, 10-17, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 24-28, 30-31, 33-34, 37, 39-42 are allowed.

***Response to Arguments***

10. Applicant's arguments with respect to claims 1-3, 9, 18-20, and 22-23 have been considered but are moot in view of the new ground(s) of rejection.

The applicant provides argument against the prior art of Narendra not disclosing the nonlinear process of combining the signals of the respective microphones to suppress the high values in the result of forming an acoustic beam. In respect to claims 1-3, 9, and 18-20 and 22, Narendra reference has been removed and an art rejection has been provided in anticipation of the Elko, who discloses combining the microphones in a nonlinear manner, where the gain of the signal are attenuated, in respect the interpretation of the claim language. Narendra has been maintained in the respect to claim 23. In respect the applicant's claim language, the broadest interpretation has used for the purpose of examination of the terms, "nonlinear manner" or "nonlinear processing estimation". The claim language fails to explicitly limit the interpretation of "nonlinear manner" or "nonlinear processing estimation".

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A Grier whose telephone number is (703) 306-4819. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks


Washington, D.C. 20231

**Or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

  
Laura A. Grier  
August 20, 2004

  
**XU MEI**  
**PRIMARY EXAMINER**